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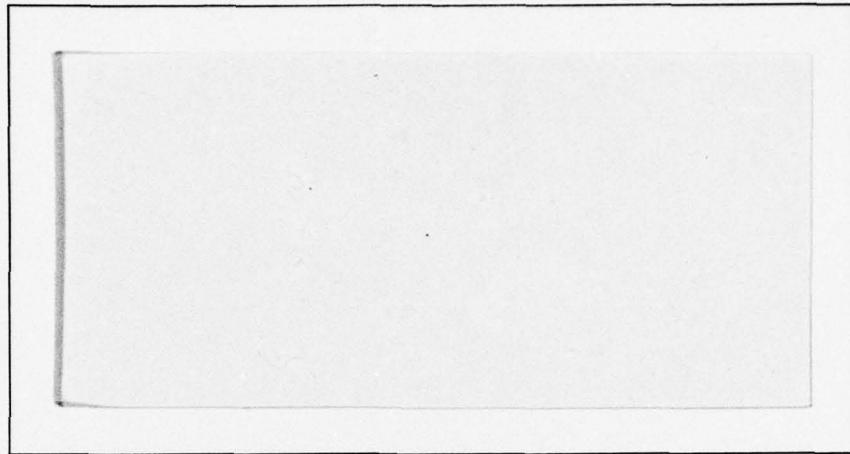


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## THE DESIGN OF WORK IN THE 1980s

by

J. Richard Hackman  
Yale University

Technical Report No. 15  
School of Organization and Management  
Yale University

February, 1978

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### Abstract

The present state of work and workers in U.S. society are examined, with special attention to evidence that provides clues about how work may be designed in the 1980s and beyond. Two different routes that may be taken in designing work in the years to come are suggested, and their likely consequences are explored. The essay closes with a prediction about the route that actually will be taken in designing and managing work in the next decade.

This essay was written for the Visiting Scholars Program of the College of Business Administration, University of Houston, and was presented there in March, 1977. It is based on research supported by the Organizational Effectiveness Research Program, Psychological Sciences Division, Office of Naval Research, under Contract No. N00014-75C-0269, NR 170-744. Reproduction in whole or in part is permitted for any purpose of the U.S. Government. Approved for public release; distribution unlimited.

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## THE DESIGN OF WORK IN THE 1980s

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Many observers are concerned these days about the quality of work life in organizations, about organizational productivity, and about possible changes in the work ethic of people in contemporary Western society. Indeed, there recently has been a clamor in the popular press that we are in the midst of a major "work ethic crisis" that has its roots in work that is designed more for robots than for mature, adult human beings (e.g., Garson, 1972; Sheppard & Herrick, 1972; Work in America, 1973). Even the very idea of work has taken on negative connotations for some commentators. Studs Terkel begins his book Working (1974), in which the thoughts and feelings of workers from many occupations are reflected, as follows:

"This book, being about work, is, by its very nature, about violence--to the spirit as well as to the body. It is about ulcers as well as accidents, about shouting matches as well as fistfights, about nervous breakdowns as well as kicking the dog around. It is, above all (or beneath all) about daily humiliations. To survive the day is triumph enough for the walking wounded among the great many of us..." (p. xi)

### Is There a Crisis?

Those who perceive that we are in the midst of a crisis in the world of work tend to argue along the following lines. No less than a revolution in the way productive work is done has occurred in the U.S. in this

century. Organizations have steadily increased the use of technology and automation in attaining organizational objectives. Consistent with this trend (and with the dictates of the "scientific management" approach to work design as espoused by F.W. Taylor (1911) at the turn of the century), work has become dramatically more specialized, simplified, standardized and routinized. Moreover, organizations themselves have become larger in size and more bureaucratic in function. Partly as a consequence of the increase in organizational size, managerial and statistical controls are used more and more to direct and enforce the day-to-day activities of organization members.

The efficiencies of advanced technology, the economies of scale, and the benefits of increased managerial control have generated substantial increases in the productive efficiency of organizations, and substantial economic benefits for both the owners of organizations and society as a whole. These economic benefits, in turn, have contributed to a general increase in the affluence, education and personal level of aspiration of individuals in American society. As a result, people today want jobs that allow them to use their education, that provide "intrinsic" work satisfactions, and that meet their expectations that work should be personally meaningful (Kanter, in press). No longer will people accept routine and monotonous work as their legitimate lot in life.

According to this line of thinking, we now have arrived at a point where the way most organizations function is in direct conflict with the talents and aspirations of the people who work in them. Such conflict manifests itself in increased personal alienation from work and in de-

creased organizational effectiveness. That which worked for Taylor early in this century, it is argued, simply cannot work now because the people who populate organizations, especially well-educated younger workers, will not put up with it.

Other observers have a contrary view (e.g., Fein, 1972; Strauss, 1974). Reports of worker discontent and demands for fulfilling work activities, they suggest, have been greatly exaggerated in the popular press and in behavioral science journals. The work ethic "crisis" may be more manufactured than real, they say, and probably represents a serious misapprehension of the actual needs and aspirations of people at work.

Considerable evidence can be marshalled in support of this contention. Perhaps most widely-publicized is a project sponsored by the Ford Foundation to test how satisfied U.S. automobile workers would be working on highly "enriched" team assembly jobs in a Swedish automobile plant. Six Detroit auto workers were flown to Sweden and spent a month working as engine assemblers in a Saab plant. At the end of the month, five of the six workers reported that they preferred the traditional U.S. assembly line. As one put it: "If I've got to bust my ass to be meaningful, forget it; I'd rather be monotonous" (Goldmann, 1976, p. 31). Arthur Weinberg, a Cornell labor relations expert who accompanied the six workers to Sweden summarized their negative reactions:

"...They felt it was a deprivation of their freedom and it was a more burdensome task which required more effort which was more tedious and stressful. They preferred the freedom the assembly line allowed them, the ability to think their

own thoughts, to talk to other workers, sing or dance on the assembly line, which you can't do at Saab. There is a freedom allowed on the assembly line not possible in more complex work. The simplified task allows a different kind of freedom. The American workers generally reacted negatively to doing more than one task. They were not accustomed to it and they didn't like it." (quoted by Gainor, 1975)

Other studies support the results of this trans-Atlantic experiment, and cast doubt on the popular notion that people who work on routine and repetitive tasks invariably experience psychological and emotional distress as a consequence (Hulin & Blood, 1968; Siassi, Crocetti & Spiro, 1974). Perhaps most supportive of the "no crisis" view are the data reported in a U.S. Department of Labor Monograph titled "Job Satisfaction: Is There a Trend?" (Quinn, Staines & McCullough, 1974). Researchers examined findings from national surveys of job satisfaction from 1958-1973 and found no decline in job satisfaction over the past two decades. The present level of employee satisfaction is, as it has been, quite high: better than 80% of the workforce consistently report being "satisfied" with their jobs.

The findings do show that younger workers are more dissatisfied with work than older workers. Yet younger workers also were more dissatisfied than their older colleagues 25 years ago, just as they are at present, casting doubt on the hypothesis that contemporary young workers are at the cutting edge of a trend toward increasing job alienation and

dissatisfaction. A crisis in job satisfaction? No. Data such as those summarized above suggest that the "crisis" may lie more in the minds of journalists and behavioral scientists than in the hearts of people who perform the work of contemporary organizations.

#### What To Conclude?

Both the argument for and the argument against a crisis in job satisfaction can be persuasive, and both sides of the question can be argued forcefully and with ample supportive data. How can we come to terms with this seeming conflict in the evidence as we attempt to generate some predictions about how work will be designed and managed in the 1980s? My own resolution of the issue takes the form of two complementary conclusions. Each of the conclusions strikes me as valid and as consistent with existing evidence about the state of work and workers in contemporary society. Yet, as will be seen, the conclusions provide quite different bases for decisions about how to proceed with the design of work in the decades to come.

Conclusion One: Many individuals are presently under-utilized and under-challenged at work. It seems to me an indisputable fact that numerous jobs in the bowels of organizations have become increasingly simplified and routinized in the last several decades, even as members of the U.S. workforce have become better educated and more ambitious in their expectations about what life will hold for them. The result is a poor fit between large numbers of people and their work. These people, who O'Toole (1975) calls "the reserve army of the under-employed," have more to offer their employers than those employers seek, and they have

personal needs and aspirations that cannot be satisfied by the work they do.

It also is indisputable that there are many people who do not seek challenge and meaning in their work, who instead aspire to a secure job and a level of income that permits them to pursue personal interests and satisfactions off the job. Do the under-utilized and under-challenged workers comprise three-quarters of the workforce, or only a quarter?

We cannot say for sure. What we can say--and what may be much more important--is that for some unknown millions of people work is neither a challenge nor a personally fulfilling part of life. And the organizations that employ these individuals are obtaining only a portion of the contribution that these people could be making at work.

Conclusion Two: People are much more adaptable than we often assume. When they must do so, people show an enormous capacity to adapt to their environments. Almost whatever happens to them, people survive and make do: gradually going blind, winning the lottery, losing one's home to fire or flood, gaining a spouse and children--or losing them. The same is true for work. Some of us adjust to challenging, exciting jobs; others of us to a pretty routine and dull state of affairs. But we adapt. Not to do so would open us to constant feelings of distress and dissatisfaction, noxious states that we are well-motivated to avoid.

This plasticity often goes unrecognized by those who argue loudly on one or the other side of the "work ethic" debate. Part of the reason is that it is very hard to see adaptation happening, except when the environment changes dramatically and suddenly. When change is gradual,

as it is when a young person adjusts to his or her job, it can be almost invisible. We tend, in our studies of work and workers, to catch people after they have adapted to their work situation, or before they have done so, rather than right in the middle of it. It is tough to figure out what is happening (or what has happened) to a person at work if you look only once.

Precisely because we adapt to our work environment, it is dangerous to take at face value self-reports of how "satisfied" people are with their work. Consider the case of Ralph Chattick, a 44-year old worker in a metal fabrication shop on the outskirts of a large midwestern city. Ralph (not his real name) has worked in the same department of his company since graduating from high school, and is being interviewed about his job.

Are you satisfied with your work?

Yes, I guess so.

Would you keep working if you won a million dollars in the lottery?

Sure. (Why?) Well, you have to do something to fill the day, don't you? I don't know what I'd do if I didn't work.

Do you work hard on your job?

I do my job. You can ask them if I work hard enough.

Is it important to you to do a good job?

Like I said, I do my job.

But is it important to you personally?

Look, I earn what I'm paid, okay? Some here don't, but I do.

They pay me to cut metal, and I cut it. If they don't like

the way I do it, they can tell me and I'll change. But it's their ball game, not mine.

Ralph is telling us that he is basically satisfied with his work.

But how are we to interpret that? Take it at face value, and conclude that he is a "satisfied worker?" No, there are some signs in this interview excerpt that all is not well with Ralph. Yet it also would be inappropriate to take a "yes" such as that provided by Ralph and routinely assume that he really isn't satisfied. Ralph is not lying to us. He is satisfied, as he understands what we are asking.

The phenomenon of job satisfaction becomes clearer, and the diagnostic task more difficult, when we put ourselves in Ralph's person and consider the alternatives he has in responding. In fact, things are not awful, which is part of the reason for responding affirmatively. Moreover, Ralph has made numerous small choices over the years (such as deciding not to change jobs or to quit work and attend school) that have increased his personal commitment to his job. To answer other than affirmatively would raise for Ralph the spectre that perhaps these choices were poor ones, that in fact he has done a bad job in managing his career: "If I'm dissatisfied with this job, then what the hell have I been doing here all these years? Why haven't I done something about it?" That is an anxiety-arousing issue to face and not one that most of us would readily choose to engage. So the easiest response, and one that fairly represents Ralph's present feelings about his work situation, is to say "Sure, I guess I'm satisfied with my job."

Because, like Ralph, most people do adapt to their work, responses

to questions about job satisfaction can be misleading, especially among people who have considerable tenure in their jobs. For the same reason, self-reports of satisfaction do not provide a sturdy enough basis on which to erect plans for organizational change--let alone national policy about quality of work life issues.

#### Choices for the 1980s

The conclusions drawn above cast doubt on the usefulness of trying to decide whether or not we are now in the midst of a work ethic "crisis." They also highlight two quite different routes that can be taken as choices are made about how to design and manage work in the next decade and beyond. One route, which derives from the conclusion that many people are under-utilized by the work they do, leads to increases in the level of challenge that is built into jobs, and in the degree of self-control job-holders have in managing their own work. In effect, we would attempt to change jobs to make them better fits for the people who do them.

The other route derives from the second conclusion; namely, that people gradually adapt and adjust to almost any work situation, even one that initially seems to greatly under-utilize their talents. This route leads to greater control of work procedures and closer monitoring of work outcomes by management to obtain increases in the productive efficiency of the workforce. Technological and motivational devices would be used to attempt to change the behavior of people to fit the demands of well-engineered jobs. The expectation is that in a carefully designed work environment employees gradually will adjust to having little personal control of their work, and that the efficiencies gained by using sophis-

ticated managerial controls of work and workers will more than compensate for any temporary dissatisfactions the people experience.

#### Route One: Fitting Jobs to People

The core idea of Route One is to build into the work increased challenge and autonomy for the people who perform it. By designing jobs so they create conditions under which employees can develop internal motivation to do well, gains might be realized both in the productive effectiveness of the organization and in the personal satisfaction and well-being of the workforce.

Specifically, the aspiration would be to design work so that employees (a) experience the work as inherently meaningful, (b) feel personal responsibility for the outcomes of the work, and (c) receive, on a regular basis, trustworthy knowledge about the results of their work activities. Research has suggested that when all three of these conditions are met, most people experience internal motivation to do a good job--that is, they get a positive internal "kick" when they do well, and feel bad when they do poorly (Hackman & Oldham, 1976). Such feelings provide an incentive for trying to perform well and, when performance is excellent, lead to feelings of satisfaction with the work and with one's self.

How might jobs be designed to create these conditions? In the article cited above, Oldham and I have attempted to specify in detail the attributes of jobs that provide a basis for internal work motivation; here I will suffice with two examples of such jobs. Consider first the assembly of a small electrical appliance, such as a toaster. Following

traditional dictates of engineering efficiency, such devices usually are manufactured using some form of a production line: one individual attaches the heating element to the chassis, another solders on the line cord, a third attaches the mechanical apparatus for handling the bread to be toasted, another inspects the assembled product, and so on.

An alternative design would be to make each employee, in effect, an autonomous toaster manufacturer. All necessary parts would be available at the employee's work station and the individual would be skilled in all aspects of toaster assembly, inspection and repair. The individual would perform the whole assembly task, would inspect his or her own work, and then (when satisfied that the apparatus was in perfect working order) would place a sticker on the bottom of the toaster. The sticker would say something along these lines: "This toaster was made by Andrew Whittier, an employee at the San Diego plant of General Toasters, Inc. I believe that it is in perfect condition and will give you years of reliable service. If, however, your toaster should malfunction in any way, please call me at my toll-free number, (800) 555-1217. We will see if we can clear up your problem over the telephone, and if not, I will authorize you to send the toaster to me and I will either repair it or send you a replacement, under the terms of the limited warranty that I packed in the box with the toaster."

What would such a design achieve? Meaningful work? Yes, I'm making a useful household appliance all on my own. Personal responsibility for the work outcomes? Yes, I am personally accountable for the performance of any toaster I release for shipping; there is no one to

blame but myself if I ship a bad product. Knowledge of results? Yes, for two reasons. First, I do my own inspection and testing before shipping, which means I can self-correct any assembly problems. And I obtain as well direct and personal feedback from customers about any problems they have with my work (not to mention the slight embarrassment of having it announced on the shop loudspeaker that "Andy, you have another call on the 800 line...!").

Surely such a design would lead to quite high internal motivation to perform effectively, and, for able employees who value the internal rewards that can be obtained from doing a demanding job well, high satisfaction with the work. The quality of work done also should improve. However, there might be some decrease in the quantity of the work done by a given worker on a given day, as compared to the more technically efficient production line design.

The hypothetical design for toaster manufacturing described above has much in common with many "job enrichment" experiments carried out in numerous organizations in the last decade (see, for example, reviews by Glaser, 1975 and Herzberg, 1976). Although the changes made in such projects inevitably involve alterations of many aspects of the work organization, not just the task itself, the focus clearly is on the work that is done by individual employees.

A different approach, but one that has many objectives in common with individual job enrichment, is to design work to be done by a more-or-less autonomous group of employees. Use of the work group as a design device requires that attention be given simultaneously to the tech-

nical and the social aspects of the work system, which often is advantageous. Indeed, the group may be the only feasible design alternative for creating a whole and meaningful piece of work in some cases, such as the assembly of automobile transmissions where coordinated activity among several individuals is essential because of the weight of the materials and the complexity of the assembly.

Probably the best-known application of group work design in a U.S. organization is the Topeka petfood plant of General Foods, where an entire new manufacturing organization was designed around the concept of the semi-autonomous work group. Each work team at Topeka (consisting of seven to fourteen members) was given responsibility for a significant organizational task. In addition to actually carrying out the work required to complete the task, team members performed many activities that traditionally had been reserved for management--such as coping with manufacturing problems, distributing individual tasks among team members, screening and selecting new team members, participating in organizational decision-making, and so on. Moreover, employees in each team were encouraged to broaden their skills on a continuous basis so that they and their teams would become able to handle even more responsibility for carrying out the work of the organization. Early reports from Topeka indicated that the innovative project has generated numerous beneficial outcomes, both for the organization and for the people who do the work (Walton, 1972; 1975a).

While autonomous work teams and job enrichment interventions have been carried out successfully in many organizations, we still have much

to learn about how most effectively to design, install and diffuse such innovations. If that learning proceeds at a rapid rate in the next few years, then the shape of work in the next decade could turn out to be quite different from what it is today. Assuming that we follow Route One, and do so competently and successfully, here are some speculations about the design and management of work in the mid-1980s.

1. Responsibility for work will be clearly pegged at the organizational level where the work is done. No longer will employees experience themselves as people who merely execute activities that "belong" to someone else (such as a line manager). Instead, they will feel, legitimately, that they are both responsible and accountable for the outcomes of their own work. Moreover, the resources and the information needed to carry out the work (including feedback about how well the work is getting done) will be provided directly to employees, without being filtered first through line and staff managers. As a result, we will see an increase in the personal motivation of employees to perform well and a concomitant increase in the quality of the work that is done.

2. Questions of employee motivation and satisfaction will be considered explicitly when new technologies and work practices are invented and engineered, as is presently the case for the employee's intellectual and motor capabilities. No longer will equipment and work systems be designed solely to optimize technological or engineering efficiency, with motivational problems left in the laps of managers and personnel consultants after work systems are put in place. Moreover, there will be no single "right answer" about how best to design work and work systems.

Sometimes tasks will be arranged to be performed by individuals working more-or-less alone; other times they will be designed to be performed by interacting teams of employees. Choices among such design options will take into account the character of the work itself (e.g., any technological imperatives that may exist), the nature of the organization in which the work will be done, and the needs, goals and talents of the people who will do the work. In many cases work will be "individualized" to improve the fit between the characteristics of an employee and the tasks that he or she performs. Standard managerial practices that apply equally well to all individuals in a work unit will no longer be appropriate. Instead, managers will have to become as adept at adjusting jobs to people as they now are at adjusting people to fit the demands and requirements of fixed jobs.

3. Organizations will be leaner, with fewer hierarchical levels and fewer managerial and staff personnel whose jobs are primarily documentation, supervision and inspection of work done by others. This will require a new way of managing people at work, and will give rise to new kinds of managerial problems. For example, to the extent that significant motivational gains are realized by enriched work in individualized organizations, managers will no longer have the problem of "how to get these lazy incompetents to put in a decent day's work." Instead, the more pressing problem may be what to do next to keep people challenged and interested in their work. For as people become accustomed to personal growth and learning at their work, what was once a challenge eventually becomes routine--and ever more challenge may be required to keep

frustration and boredom from setting in. How to manage an organization so that growth opportunities are continuously available may become a difficult managerial challenge--especially if, as predicted, there is shrinkage in the number of managerial slots into which employees can be promoted.

4. Finally, if the previous predictions are correct, there eventually will be a good deal of pressure on the broader political and economic system to find ways to use effectively human resources that no longer are needed to populate the bowels of work organizations. Imagine that organizations eventually do become leaner and more effective and, at the same time, the rate of growth of society as a whole is reduced to near-zero. Under such circumstances, there will be large numbers of people who are "free" for meaningful employment outside traditional private and public work organizations. To expand welfare services and compensate such individuals for not working (or for working only a small portion of the time they have available for productive activities) would be inconsistent with the overall thrust of Route One. But what, then, is to be done with such individuals? Can we imagine groups of public philosophers, artists and poets, compensated by society for contributing to the creation of an enriched intellectual and aesthetic environment for the populace? An interesting possibility, surely, but one that would require radical re-thinking of public decision-making about the goals of society and the way shared resources are to be allocated toward the achievement of those goals.

### Route Two: Fitting People to Jobs

If we take Route Two, the idea is to design and engineer work for maximum economic and technological efficiency, and then do whatever must be done to help people adapt and adjust in personally acceptable ways to their work experiences. No great flight of imagination is required to guess what work will be like in the 1980s if we follow Route Two, as the sprouts of this approach are visible at present. Work is designed and managed in a way that clearly subordinates the needs and goals of people to the demands and requirements of fixed jobs. External controls are employed to ensure that individuals do in fact behave appropriately on the job. These include close and directive supervision, financial incentives for correct performance, tasks that are engineered to minimize the possibility of human mistakes, and information and control systems that allow management to monitor the performance of the work system as closely and continuously as possible. And, throughout, productivity and efficiency tend to dominate quality and service as the primary criteria for assessing organizational performance.

If we continue down Route Two, what might we predict about the design and management of work in the 1980s? Here are my guesses.

1. Technological and engineering considerations will dominate decision-making about how jobs are designed. Technology is becoming increasingly central to many work activities, and that trend will accelerate. Also, major advances will be achieved in techniques for engineering work systems to make them ever more efficient. Together, these developments will greatly boost the productivity of individual workers

and, in many cases, result in tasks that are nearly "people proof" (that is, work that is arranged to virtually eliminate the possibility of error due to faulty judgment, lapses of attention, or mis-directed motivation). Large numbers of relatively mindless tasks, including many kinds of inspection operations, will be automated out of existence. The change from person to machine not only will further increase efficiency, but also will eliminate many problems that arise from human frailties, as suggested by Oliver (1977, p. 183) in an essay on the future of automated instrumentation and control:

"Automatic test systems do not fudge the data or make mistakes in recording it or get tired or omit tests or do any of the dozens of troublesome things human beings are apt to do. Whatever tests the program specifies will be made regardless of the time of day or the day of the week; no front office pressure to ship goods by a certain date can compromise the computer's inspection."

Simultaneous with these technological advances will be a further increase in the capability of industrial psychologists to analyze and specify in advance the knowledge and skills required for a person to perform satisfactorily almost any task that can be designed. Sophisticated employee assessment and placement procedures will be used to select people and assign them to tasks, and only rarely will an individual be placed on a job for which he or she is not fully qualified.

The result of all of these developments will be a quantum improvement in the efficiency of most work systems, especially those that pro-

cess physical materials or paper. And while employees will receive more pay for less work than they presently do, they also will experience substantially less discretion and challenge in their work activities.

2. Work performance and organizational productivity will be closely monitored and controlled by managers using highly sophisticated information systems. Integrated circuit microprocessors will provide the hardware needed to gather and summarize performance data for work processes that presently defy cost-efficient measurement. Software will be developed to provide managers with data about work performance and costs that are far more reliable, more valid, and more current than is possible with existing information systems. Managers increasingly will come to depend on these data for decision-making, and will use them to control production processes vigorously and continuously.

Because managerial control of work will increase substantially, responsibility for work outcomes will lie squarely in the laps of managers, and the gap between those who do the work and those who control it will grow. There will be accelerated movement toward a two-class society of people who work in organizations, with the challenge and intrinsic interest of managerial and professional jobs increasing even as the work of rank-and-file employees becomes more controlled and less involving.

3. Desired on-the-job behavior will be elicited and maintained by extensive and sophisticated use of extrinsic rewards. Since (if my first prediction is correct) work in the 1980s will be engineered for clarity and simplicity, there will be little question about what each employee should (and should not) do on the job. Moreover, (if my second

prediction is correct) management will have data readily at hand to monitor the results of the employee's work on a more-or-less continuous basis. All that is required, then, are devices to ensure that the person actually does what he or she is supposed to do. Because many jobs will be routinized, standardized, and closely controlled by management, it is doubtful that employee motivation to perform appropriately can be created and maintained using intrinsic rewards (i.e., people working hard and effectively because they enjoy the tasks, or because they obtain internal reinforcement from doing them well). So it will be necessary for management to use extrinsic rewards (such as pay or supervisory praise) to motivate employees by providing such rewards contingent on behavior that is in accord with the wishes of management.

In recent years the fine old principle of contingent rewards has been dressed up in the rather elaborate and sophisticated clothes of "behavior modification" as espoused by B.F. Skinner (see, for example, Luthans and Kreitner, 1975). Research evidence shows that in many circumstances, contingent rewards do powerfully shape individual behavior. If we follow Route Two, I predict that behavior modification programs will be among the standard motivational techniques used in work organizations in the 1980s.

4. Most organizations will sponsor programs to aid employees in adapting to life at work, including sophisticated procedures for helping employees and their families deal with alcohol and drug abuse problems. Such programs will become much more widely offered (and needed) than they are at present, I believe, because of unintended spin-offs of the

movement toward the rainbow of productive efficiencies promised at the end of Route Two.

Consider, for example, a person working in an organization this year, in the mid-1970s, whose work is undemanding, repetitive and routine. It might be someone who matches checks and invoices, and then clips them together to be processed by another employee. Imagine that we asked that individual the following question: "What happens to you, what outcomes do you receive, when you try to work especially hard and effectively on your job?" The answers are likely to be far from inspiring. Probably they will have more to do with headaches and feelings of robohood than with any sense of meaningful personal accomplishment from high on-the-job effort. Clearly, such perceived outcomes reveal a lack of any positive, internal motivation to work hard and effectively.

Now let us transport that employee via time machine to the mid-1980s, and place him on a very similar job under full-fledged Route Two conditions. The work is just as routine and undemanding as it was before. But now there is greater management control over hour-by-hour operations, and valued external rewards are available--but only when the employee behaves in close accord with explicit management specifications. How will our hypothetical employee react to that state of affairs?

At first, he is likely to feel even more like a small cog in a large wheel than he did before. Whereas prior to the introduction of the new management controls he could get away with some personal games or fantasies on the job, that is now much harder to do. Moreover, the problem is exacerbated, not relieved, by the addition of the performance-

contingent rewards. The negative intrinsic outcomes that were contingent on the hard work in the 1970s are still felt--but they have been supplemented (not replaced) by a set of new and positive extrinsic outcomes. So the employee is faced with contingencies that specify "The harder I work, the more negative I feel about myself and what I'm doing, the more likely I am to get tired and headache on the job, and the more likely I am to get praise from my supervisor and significant financial bonuses."

That state of affairs is precisely what we might devise if we wished deliberately to drive someone insane--that is, arranging the work and its rewards such that strong positive and strong negative outcomes are simultaneously contingent on the same behavior (in this case, working hard). Some of the problems of drug usage, alcoholism and industrial sabotage that presently are observed in work organizations appear to derive from this kind of no-win state of affairs. And if we move vigorously down Route Two, we can predict with some confidence that signs of employee "craziness" will increase.

Only a small proportion of the workforce will exhibit severely maladaptive behaviors, however, even under full-fledged Route Two conditions. As suggested earlier, people have a good deal of resilience and usually can adjust and adapt to almost any work situation if given enough time and latitude to do so. So although we can predict that numerous individuals will feel tension and stress in adjusting to work in the 1980s, and that their aspirations for personal growth and development at work may be significantly dampened, major overt problems will be observed infrequently.

Yet because any "crazy" employee behavior is an anathema to management (and clearly dysfunctional for organizational effectiveness), managers will attempt to head off such behaviors before they occur. When they do occur, management will deal with them as promptly and as helpfully as possible. So we should see in the 1980s a substantial elaboration of organizational programs to help people adapt in healthy ways to their work situations, and to minimize the personal and organizational costs of maladaptive responses to the work. All will applaud such programs, because they will benefit both individual human beings and their employing organizations. Few will understand that the need for such programs came about, in large part, as a result of designing work and managing organizations according to the technological and motivational "efficiencies" of Route Two.

#### At the Fork in the Road

Which will it be in the 1980s--Route One, or Route Two? There will be no occasion for making an explicit choice between the two. Instead, the choice will be enacted as seemingly insignificant decisions are made about immediate questions such as how to design the next generation of a certain technology, how to motivate employees and increase their commitment to their present jobs, or how best to use the sophisticated information technologies that are becoming available.

My view, based on the choices that even now are being made, is that we are moving with some vigor down Route Two. That direction, moreover, is unlikely to change in the years to come, for at least two reasons.

First, we know how to operate according to Route Two rules, and

we're fumbling at best when we try to design a work unit in accord with Route One (Hackman, 1975). Present theory about how to design enriched jobs and autonomous work groups is still primitive, and is depressingly uninformative about how the properties of people, jobs and organizational units interact in determining the consequences of a given innovative design for work. Moreover, we are only just beginning to develop procedures for assessing the economic costs and benefits of innovative work designs (Macy & Mirvis, 1976), and for reconciling the dual criteria of efficiency and quality of work life in designing work systems (Lupton, 1975).

While it is not surprising given the paucity of theory and research on work redesign, it also is significant that there exists no trained, competent cadre of managers and behavioral scientists primed to create innovative work systems in contemporary organizations. We do have a substantial and growing set of case studies describing successful work redesign projects, but little systematic knowledge about how to proceed with such work redesign activities has emerged from these studies. Moreover, there are very few instances in which even a highly successful program has been successfully diffused throughout the larger organization in which it was developed--let alone from organization to organization (Walton, 1975). Even the much-touted Topeka experiment has not had much of an impact on the broader General Foods organization, and is now being viewed with a good deal of skepticism by some commentators (see, for example, "Stonewalling Plant Democracy," Business Week, 28 March 1977, pp. 78-82).

Secondly, even if we did know how to design and manage work according to Route One dictates, my guess is that we would decide not to do so. There are many reasons. For one, Route One is heavily dependent on behavioral science knowledge and techniques, whereas Route Two depends more on "hard" engineering technology and traditional economic models of organizational efficiency. If behavioral science has ever won out over an amalgam of engineering and economics, the case has not come to my attention. Moreover, Route One solutions, if they are to prosper, require major changes in how organizations themselves are designed and managed; Route Two solutions, on the other hand, fit nicely with traditional hierarchical organizational models and managerial practices. Again, it seems not to be much of a contest.

But perhaps most telling is the fact that Route Two is much more consistent with the behavioral styles and values of both employees and managers in contemporary organizations. Experienced employees know how to adapt and survive on relatively routine, unchallenging jobs. Would such individuals, most of whom are comfortable and secure in their work lives, leap at the chance for a wholly different kind of work experience in an organization designed in accord with the principles of Route One? Some would, to be sure, especially among the younger and more adventurous members of the workforce; but I suspect that many would not. Learning how to function within a Route One organization would, for many, be a long and not terribly pleasant process, and it is unclear how many would be willing to tolerate the upset and the anxiety of the change process long enough to gain a sense of what work in a Route One organization

might have to offer.

Managers, too, have good reasons to be skeptical about Route One and its implications. The whole idea flies in the face of beliefs and values about people and organizations that have become very well-learned and well-accepted by managers of traditional organizations. For example: that organizations are supposed to be run from the top down, not from the bottom up. That many employees have neither the competence nor the commitment to take real responsibility for carrying out the work of the organization on their own. That organizational effectiveness should be measured primarily, if not exclusively, in terms of the economic efficiency of the enterprise. That more management control of employee behavior is better management.

Am I being too pessimistic? Perhaps. There are documented instances where employees and managers alike have responded with enthusiasm to work redesign projects that had many of the trappings of the Route One approach. Yet it is troublesome to note that very few of these experiments have persisted and diffused widely throughout the organizations where they took place. Why? The optimistic reason is that we do not yet have sufficient knowledge and skill about maintaining and diffusing innovations in organizations--but, with additional research, we soon will learn how to create conditions necessary for Route One innovations to catch on and spread. The pessimistic reason is that, without being fully aware of the fact, we have already progressed so far down Route Two that it may be nearly impossible to turn back.

As should be apparent from my remarks, I'm very favorably disposed

to the ideas and the aspirations of Route One. But as may also be apparent, I suspect that my pessimistic explanation may have validity, that it may be too late to change directions, and that my description of Route Two may turn out to be a good characterization of what work will be like in the 1980s and beyond.

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